UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,840	02/08/2006	Francesc Dalmases	DE030285	7340

24737 7590 11/13/2008

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER	
SIMS, JING F	

ART UNIT	PAPER NUMBER
4148	

MAIL DATE	DELIVERY MODE
11/13/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/567,840	DALMASES ET AL.	
	Examiner	Art Unit	
	JING SIMS	4148	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02/08/2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 February 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *03/20/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The instant application having Application No. 10567840 filed on 02/08/2006 is presented for examination by the examiner.

Oath/Declaration

2. The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in **37 C.F.R. 1.63.**

Priority

3. As required by **M.P.E.P. 201.14(c)**, acknowledgement is made of applicant's claim for priority based on applications filed on 08/13/2003 (European Patent Office (EPO) 03102524.0).

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

4. The applicant's drawings submitted are acceptable for examination purposes.

Specification

5. Applicant is reminded of the proper layout for specification. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
(e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
(f) BACKGROUND OF THE INVENTION.
    (1) Field of the Invention.
    (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(g) BRIEF SUMMARY OF THE INVENTION.
(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(i) DETAILED DESCRIPTION OF THE INVENTION.
(j) CLAIM OR CLAIMS (commencing on a separate sheet).
(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Information Disclosure Statement

6. The information disclosure statement (IDS) submitted on 03/20/2007. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. **Claims 1,2,5,9,11,and 12** are rejected under 35 U.S.C. 102(b) as being anticipated by Zhang. (US Patent US 6369758).

As per claim 1, Zhang discloses "An encryption method for a digital transmission system, in which the digital data stream (x(t)) comprises an alternating sequence of training sequences or pilot carriers and data symbols (u)" (column 4, line 49-56, the transmitter includes a training symbol generator for generating Training Symbols TRS I and TRS II. The output of OFDM processor and training symbols generator are provided to a symbol selector which inserts training symbols into the train of OFDM symbols to produce successive frames. The training symbols and pilot carriers are shown in figure 3. In column 7, line 53-57, the "alternating sequence" has been taught by result in pseudo random training symbol) "and the training sequence is transmitted in coded form, characterized in that the coding of the training sequence takes place with a dynamic encryption code (v.sub.n)" (the dynamic encryption code defined in instant application as inserting the pseudo random training sequence to serve the function of encryption, therefore in column 7, line 53-57, Zhang teaches P(t) is a pseudo random phase function and it results in pseudo random training symbols).

As per claim 2, Zhang discloses “an encryption method as claimed in claim 1, characterized in that the dynamic encryption code (v.sub.n) is generated by a random generator” (column 7, line 21-23, P(t) is a pseudo random phase function; line 53-57, several other definitions of P(t) are possible so long as they result in pseudo random training symbols; figure 5, reference 54, training symbol generator).

As per claim 5, Zhang discloses “a decoding method for a digital data stream (x(t)), which is established by a scanner and comprises an alternating sequence of training sequences and data symbols (u)” (column 2, line 31-34, each antenna output signal being received from one of a plurality of branches, each radio signal comprising a frame including a pseudo random training symbol and at least one data symbol. Column 3, line 53-62, and figure 1, the “scanner” are comprised by a downconverter 14, analog to digital converter 16, complex separator 18, and a complex weighting device 24) “wherein the training sequences or pilot carriers are coded” (column 7, line 53-57, P(t) is a pseudo random phase function and it results in pseudo random training symbols) “following scanning of the received digital data stream (x(t)), extracted from it and sent to a correlator” (column 3, the process of extracting has been taught in line 53-62; line 4-7, correlator has been mentioned as “on autocorrelation properties”, and column 4, line 3-10, the adaptive antenna array controller 22 performs the function of autocorrelation) “wherein a receiving-end decoding code (v.sub.n) is also sent to the correlator” (column 8, line 35-40, the correlation steps assume that the pseudo random training symbol TRS I is previously known to the adaptive antenna array controller 22) “which, on the basis of the two signals, finds a maximum, which is used as the

correcting variable for the time and frequency correction of the scanner" (column 8, line 40-47, assuming that the minimal points found through optimization techniques, check the correlation coefficients between array outputs and the reference of TRS I. Fig. 1, the complex weighting device 24 takes in the single after the outputs of Adaptive antenna array controller 22) "characterized in that the decoding code (v.sub.n) is dynamic and a code generator generates the dynamic decoding code (v.sub.n) as a function of an encryption key (200)" (column 7, line 53-57, P(t) is a pseudo random phase function and it results in pseudo random training symbols. The variable of function P is t, time; therefore, the pseudo random phase function is also dynamic).

As per claim 9, Zhang discloses "an appliance for the synchronization of a receiver with a received digital data stream" (the purpose of the training symbols or pilot carrier is to synchronize signals between transmitter and receiver, as evidence, in US patent application 10082631, Spruyt teaches "for synchronization purposes, a transmitter multiplexes a pilot carrier with carriers whereon data elements (DATA) are modulated" in the abstract) "wherein, for the implementation of the synchronization, training sequences or pilot carriers (v.sub.n) are extracted from the received data stream and correlated with the decoding code" (column 8, line 35-47, such correlation steps assume that the pseudo random training symbol TRSI is previously known to the adaptive antenna array controller 22. If the minimal point found through optimization, check the correlation coefficients between array outputs and the reference of TRS I. Since adaptive antenna array controller 22 check the correlation coefficients between array outputs and the reference of TRS I, the training sequences must be already

extracted from the data stream. Zhang teaches with the decoding code in column 7, line 53-57, P(t) is a pseudo random phase function and it results in pseudo random training symbols) "characterized in that the synchronization appliance is equipped with a dynamic code generator" (figure 5, "Training Symbol Generator 54").

As per claim 10, Zhang discloses "a synchronization appliance as claimed in claim 9", characterized in that it is equipped with means for storing an encryption key (200)" (As shown in rejection of claim 7, Zhang shows "transmitting of an encryption key (200)", therefore, to perform the synchronization by utilizing the key, the transmitted key must be stored in the receiving side).

As per claim 11, Zhang discloses "a digital transmission system with an appliance for the synchronization of a receiver with a received digital data stream" (the purpose of the training symbols or pilot carrier is to synchronize signals between transmitter and receiver, as evidence, in US patent application 10082631, Spruyt teaches "for synchronization purposes, a transmitter multiplexes a pilot carrier with carriers whereon data elements (DATA) are modulated" in the abstract) "characterized in that the receiver is equipped with: means for extracting training sequences" (column 4, line 19-28, the timing controller 20 includes complex data buffer with timing pointer that points to the beginning of an current OFDM or training symbol. Figure 1, the steps from Timing controller 20 to OFDM receiver 30. Timing controller 20 receives the preferred transmission frame 38 (Figure 2), OFDM receiver 30 receives the OFDM signal that extract from transmission frame 38, and adaptive antenna array controller 22 extracts TRS I or TRS II to apply weighting that will cause the antenna array to steer

towards one desired signal path (column 4, line 64-67)) “means for determining a correcting variable for a scanner” (column 4, line 19-28, the timing controller 20 includes complex data buffer with timing pointer that points to the beginning of an current OFDM or training symbol); “means for generating a dynamic code” (column 7, line 53-57, P(t) is a pseudo random phase function and it results in pseudo random training symbols. Column 8, line 35-40, the correlation steps assume that the pseudo random training symbol TRS I is previously known to the adaptive antenna array controller 22).

As per claim 12, Zhang discloses “a use of an encryption method and/or a decoding method” (column 4, line 49-56, the transmitter includes a training symbol generator for generating training symbols and in column 7, line 53-57, Zhang indicates P(t) is a pseudo random phase function and it results in pseudo random training symbols. Decoding method has been taught in Figure 1) “in which the digital data stream comprises an alternating sequence of training sequences or pilot carriers and data symbols” (Figure 4 shows a frame structure of a digital data stream. Column 4, line 29-41, transmissions comprise successively transmitted frames) “and the training sequence or the pilot carrier is dynamically coded, in wired or wireless networks” (column 7, line 53-57, P(t) is a pseudo random phase function and it results in pseudo random training symbols, and in column 1, line 11-15, Zhang teaches the invention is a multicarrier wireless transmission system employing OFDM modulation).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. **Claims 3 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang in view of Fujimura et al. (US 6650718 B1) (hereinafter Fujimura).

As per claim 3, Zhang discloses claim 1; however, Zhang does not explicitly disclose "characterized in that the encryption method uses individual elements (v.sub.n, v.sub.n+1. . .) in succession from a defined set (G.sub.i) of encryption codes"

Fujimura discloses "characterized in that the encryption method uses individual elements (v.sub.n, v.sub.n+1. . .) in succession from a defined set (G.sub.i) of encryption codes" (column 8, line 48-57, the device performs a select process by vector selecting. In the case of selecting one of the four combined vectors that pre-generated from CI, SI, CQ and SQ, the vector combining/selecting means for selecting two data sequences form among eight data sequences. In the instant application, the individual elements V, and the defined set G are vectors, therefore, Fujimura teaches the process of select a subset of vector/sequence from the pre-generated se of vector/sequence).

Zhang and Fujimura are analogous art because they are from the same field of endeavor selecting vector elements of a subset from a pre-generated set in demodulation system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of generating pseudo-random training sequence as described by Zhang and to select sub-vector/sub-sequence form a pre-generated set of vectors/sequence as taught by Fujimura to minimize the computational complexity of generating pseudo-random code (see Fujimura column 8, line 28-40).

As per claim 6, Zhang discloses claim 5; however, Zhang does not explicitly disclose “characterized in that a permutation function (F.sub.i) defines the content of a set of decoding codes (v.sub.n)”.

Fujimura discloses “characterized in that a permutation function (F.sub.i) defines the content of a set of decoding codes (v.sub.n)” (column 6, line 57-67, and column 8, line 48-57, “selecting two data sequences from among eight data sequences". The “two data sequences” is an example of the permutation function, and the “eight data sequences” is a set of decoding codes).

Zhang and Fujimura are analogous art because they are from the same field of endeavor selecting vector elements of a subset from a pre-generated set in demodulation system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of generating pseudo-random training sequence as described by Zhang and to select sub-vector/sub-sequence form a pre-generated set of vectors/sequence as taught by Fujimura to minimize the computational complexity of generating pseudo-random code (see Fujimura column 8, line 28-40).

11. **Claims 4 and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang in view of Fujimura, and further in view of Quigley (Ellie Quigley, Linux Shells by Example, 05/30/2000, Prentice Hall).

As per claim 4, Zhang in view of Fujimura discloses claim 3, and "the set (G.sub.i) of dynamic training sequences (g.sub.1, g.sub.2) is implemented"; however, they do not explicitly disclose "in the form of a loop, from the beginning to the end and then starting at the beginning again".

Quigley discloses "in the form of a loop, from the beginning to the end and then starting at the beginning again" (chapter 7.7 Loop, line 2-4, and , line 5-29, loops are used to repeatedly execute the statements following the test expression if a condition is true).

Zhang, Fujimura, and Quigley are analogous art because the logic and mathematics they teach can be directly implemented in signal transmitting system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the dynamic training sequence that generated from a pre-defined set as described by Zhang in view of Fujimura and to explain the implementation is in the form of loop as taught by Quigley to iterate through until to the end of signal that need to be transmitted (see Quigley, chapter 7.7 loops, line 1-3).

As per claim 8, Zhang discloses "a decoding method as claimed in claim 5"; however, Zhang does not explicitly disclose the additional requirements of the claim 8.

Fujimura discloses "characterized by the implementation of a permutation procedure (400)" (column 6, line 57-67, and column 8, line 48-57, "selecting two data

sequences from among eight data sequences". The “two data sequences” is an example of the permutation function, and the “eight data sequences” is a set of decoding codes).

Zhang and Fujimura are analogous art because they are from the same field of endeavor selecting vector elements of a subset from a pre-generated set in demodulation system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of generating pseudo-random training sequence as described by Zhang and to select sub-vector/sub-sequence form a pre-generated set of vectors/sequence as taught by Fujimura to minimize the computational complexity of generating pseudo-random code (see Fujimura column 8, line 28-40).

Quigley discloses “comprising a loop with the following steps: set (410) an interval (n) to 1; wait (420) for the end of a predefined hop interval (I.sub.hop); increase (430) the interval (n) by the value of 1; undertake a comparison (440) of whether the current value of the interval (n) is greater than the total number (M) of elements in a permutation function (F.sub.i), which indicates the positions of the dynamic codes (g.sub.n) to be used for a decoding of the digital data stream (x(t)), wherein, either the following takes place if the result of the comparison is positive: reset the interval (n) to a value of 1; or, if the result of the comparison is negative: equate the current decoding function (v.sub.n) with the decoding code (g.sub.p.sub.--.sub.n) located at the position (p_n) specified by the permutation function (F.sub.i)” (chapter 7.7 Loop, line 2-4, and , line 5-29, loops are used to repeatedly execute the statements following the test

expression if a condition is true. The procedure in the instant application describes using a typical loop programming structure to control the hop interval and utilizing the condition test statement to branch the flow of data to execute one task or the other).

Zhang, Fujimura, and Quigley are analogous art because the logic and mathematics they teach can be directly implemented in signal transmitting system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the dynamic training sequence that generated from a pre-defined set as described by Zhang in view of Fujimura and to explain the implementation is in the form of loop as taught by Quigley to iterate through until to the end of signal that need to be transmitted (see Quigley, chapter 7.7 loops, line 1-3).

12. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang in view of Fujimura, and further in view of Munday et al. (US Patent 4442527) (hereinafter Munday).

As per claim 7, Zhang discloses “a decoding method as claimed in claim 5, characterized by the following steps: transmitting of an encryption key (200) (as shown in rejection of claim 1, Zhang shows “the coding of the training sequence takes place with a dynamic encryption code”, therefore, to perform the synchronization at the receiving side, the encryption key to decode the training sequence must be available, and therefore the encryption key must be transmitted from the send to the receiver. Furthermore, in column 8, line 35-40, Zhang teaches that the correlation steps assume that the pseudo random training symbol TRS I is previously known to the adaptive antenna array controller 22); however Zhang does not explicitly discloses “defining

(210) a permutation function (F.sub.i) defining (220) a set of decoding codes (g.sub.1, g.sub.2, . . .g.sub.H) and defining (230) a hop interval (I.sub.hop), wherein the last three steps (210, 220, 230) may be performed in any order"

Fujimura discloses "thereby: defining (210) a permutation function (F.sub.i) defining (220) a set of decoding codes (g.sub.1, g.sub.2, . . .g.sub.H)" (column 8, line 48-57, the device performs a select process by vector selecting. In the case of selecting one of the four combined vectors that pre-generated from CI, SI, CQ and SQ, the vector combining/selecting means for selecting two data sequences form among eight data sequences. In the instant application, the individual elements V, and the defined set G are vectors. Permutation function appears to be selection of vectors/sequence; and set of decoding codes are the pre-generated set of vector/sequence).

Zhang and Fujimura are analogous art because they are from the same field of endeavor selecting vector elements of a subset from a pre-generated set in demodulation system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of generating pseudo-random training sequence as described by Zhang and to select sub-vector/sub-sequence form a pre-generated set of vectors/sequence as taught by Fujimura to minimize the computational complexity of generating pseudo-random code (see Fujimura column 8, line 28-40).

Munday discloses "defining (230) a hop interval (I.sub.hop), wherein the last three steps (210, 220, 230) may be performed in any order" (column 1, line 40-43, a

radio transmitting and receiving network arranged to hop at a predetermined rate through a predetermined range of frequency channels. In line 50-51, a timing arrangement operative to control the timing of the pseudo-random sequence generating means. No reference restricts the order of the three steps been performed.)

Zhang, Fujimura, and Munday are analogous art because Zhang and Munday are from the same field of synchronization in radio transmitting system, and they are all endeavor of selecting vector elements of subset from a pre-generated set in demodulation mode.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the transmitting pattern that describes as Zhang in view of Fujimura by the hop interval as taught in Munday because it would provide the purpose of synchronizing circuits (see Munday column 1, line 5-14).

Conclusion

13. The following prior art made of record and not relied upon is cited to establish the level of skill in the applicant's art and those arts considered reasonably pertinent to applicant's disclosure. See **MPEP 707.05(c)**.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JING SIMS whose telephone number is (571)270-7315. The examiner can normally be reached on 7:30am-5:00pm EST, Mon-Thu.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Pham can be reached on (572)272-3689. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

October 31st, 2008 Jing Sims

/J.S./
Examiner, Art Unit 4148

/Thomas K Pham/
Supervisory Patent Examiner, Art Unit 4148